which may be interpreted to mean that estimated log catch increases or decreases by a value equal to the net regression coefficients of the respective climatic factors as shown in the equation.

From the absolute values of Beta coefficients it is apparent that the order of relative importance of the different climatic factors is as follows:

Soil moisture (0.5713), Minimum temperature (0.8068), 8.30 A.M. relative humidity, 5.30 P.M. relative humidity, and negative values are obtained on maximum temperature (–0.5038) and rainfall (–0.3066).

From the above account it is clear that soil moisture and minimum temperature are the two most influential climatic factors in determining the log catch of *M. laetivirens*, and maximum temperature and rainfall tend to play a negative role whereas the abiotic factors considered are insignificant.

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30. DEVELOPMENTAL BEHAVIOUR OF ALATE AND APTEROUS FORMS OF *MYZUS PERSICAE* (SULZER) ON ROCKET SALAD IN PUNJAB[1]

INTRODUCTION

Myzus persicae (Sulzer) has been reported to cause injury of economic significance on rocket salad (*Eruca sativa* Linn.) in Punjab (Sandhu *e tal.* 1981). The pest is cosmopolitan in distribution (David 1957). In India it has been reported from all the states (Ghosh 1974, Verma and Misra 1975, Verma 1977). The insect is polyphagous in nature and has been reported to feed on 221 different hosts

[1] A part of the Thesis of the junior author approved for M.Sc. (Entomology) degree of Punjab Agricultural University, Ludhiana, in 1984.

(Singh 1984). On rocket salad the insect is active from the last week of November to early April, but the crop sown in the end of November harbours very high aphid population, resulting in poor yield (Singh and Singh 1985). While working on the biology of this insect at Ludhiana it was observed that both the alate and apterous forms were available in abundance during January-April on rocket salad. Since no information on the relative developmental behaviour of these forms is available, it was considered desirable to collect information on various biological parameters of these two forms. The results are presented in this paper.

Material and Methods

The developmental behaviour was studied in respect of various parameters namely nymphal duration, pre-reproductive, reproductive, post-reproductive periods, fecundity, longevity and period of generations. The observations for various biological parameters were carried out starting from last week of January to first week of April, 1983. A single mother aphid of alate or apterous form was released on 4 leaf stage plant under a glass chimney with a camel-hair brush. The food was changed as and when needed. Twenty five such plants were kept for each form. The young ones produced were removed daily from these plants retaining only the mother aphid. All the plants under study were observed daily for recording the observations.

For working out the reproductive period, all the young ones produced by a given aphid in a day were dislodged with a camel-hair brush daily. Reproduction per day was calculated by dividing the fecundity of an aphid by its reproductive period.

Results and Discussion

Observations on the various biological parameters of alate and apterous forms recorded

Table 1

Duration of different nymphal instars of alate and apterous forms

Period of observation	Form of aphid	Duration of nymphal instars (days) Ist	IInd	IIIrd	IVth	Total nymphal period (days)	Temp. (°C)	R.H. (%)
23.1.1983 to 1.4.1983	Alate	3.0	3.0	6.0	7.0	19.0	15.7	57.0
	Apterous	2.6	2.5	2.9	3.1	11.1		

Table 2

Pre-reproduction, reproductive and post-reproductive periods, fecundity and longevity of alate and apterous

Period of observation	Form of aphid	Pre-reproductive period (days)	Reproductive period (days)	Post-reproductive period (days)	Average Fecundity	Fecundity day	Adult longevity	Period of generation (days)
23.1.1983 to 1.4.1983	Alate	1.0	33.0	0.0	48.0	1.5	33.0	54.0
	Apterous	1.1	19.1	6.1	73.0	3.1	25.2	42.1

from 23.1.1983 to 1.4.1983 are discussed below.

The total nymphal duration of alate form was 19.0 days against 11.1 days of apterous form (Table 1). But there was no difference in the pre-reproductive period of this period, being 1 day in case of alate and 1.1 days in case of apterous form (Table 2).

The reproductive period of two forms also varied greatly. It was 33 days in the alate form against 19.1 days in the apterous form (Table 2). Toba (1964) reported the reproductive period of alate to vary from 1-26 days in Hawaii. However, Lal (1950) reported that the reproductive period of alate *M. persicae* varied from 10-17 days at Delhi during different months.

Data in Table 2 reveal that the post-reproductive period of alate was zero against 6.1 days in that of apterous. Average daily rate of reproduction of alate was 1.5 nymphs as compared to almost double (3.1 nymphs) in case of apterous. The average number of nymphs laid by a single alate female in its life was 48.0 and that of apterous 73.0. Lal (1950) and Toba (1964) have also reported that the number of off-springs laid by alate female are less than that of apterous. The longevity of adult alate was 33.0 days against 25.2 days in apterous form. The greater longevity of alatae than that of apterae seems to give the former more time for dispersal and transmission of plant virus diseases. The period of generation of alate form was 54.0 days against 42.1 days of apterous. Lal (1950) also observed that alate survived longer than the apterous.

From the above observations, it can be summarized that the total nymphal period, reproductive period, longevity and period of generation of alate *M. persicae* are comparatively longer than those of apterous but post-reproductive period and fecundity are less than that of apterae.

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